

Claims:

1. A method, comprising:
 - receiving a first set of satellite tracking data at a server;
 - generating integrity data for a second set of satellite tracking data using said first set of satellite tracking data; and
 - transmitting said integrity data to at least one remote receiver having said second set of satellite tracking data.
2. The method of claim 1, further comprising:
 - generating additional integrity data for additional sets of satellite tracking data using said first set of satellite tracking data; and
 - transmitting said additional integrity data to remote receivers having said additional sets of satellite tracking data.
3. The method of claim 1, further comprising:
 - receiving additional sets of satellite tracking data at said server over a period of time; and
 - updating said integrity data using said additional sets of satellite tracking data.
4. The method of claim 3, wherein said integrity data is periodically transmitted to said at least one remote receiver.
5. The method of claim 1, wherein said integrity data is transmitted to said at least one remote receiver in response to a request from said at least one remote receiver.
6. The method of claim 1, further comprising:
 - receiving satellite signals at a reference station;
 - computing a position of said reference station using said satellite signals and said second set of satellite tracking data; and

comparing said position to a known position of said reference station to augment said integrity data.

7. The method of claim 6, wherein said integrity data is transmitted to said remote receiver in response to a deviation of said position from said known position that exceeds a threshold.

8. The method of claim 1, wherein said first set of satellite tracking data comprises at least one of first orbit data and first clock data, and said second set of satellite tracking data comprises at least one of second orbit data and second clock data.

9. The method of claim 8, wherein said step of generating comprises at least one of:

comparing said first orbit data with said second orbit data to identify an orbit discrepancy; and

comparing said first clock data with said second clock data to identify a clock discrepancy.

10. The method of claim 9, wherein said integrity data is transmitted to said remote receiver in response to at least one of an identified orbit discrepancy that exceeds a threshold and an identified clock discrepancy that exceeds another threshold.

11. The method of claim 1, wherein said first set of satellite tracking data comprises satellite health data.

12. The method of claim 11, wherein said step of generating comprises analyzing said satellite health data to identify unhealthy satellites.

13. The method of claim 12, wherein said integrity data is transmitted to said remote receiver in response to an identified unhealthy satellite.

14. The method of claim 1, wherein said first set of satellite tracking data is received from at least one of a network of reference stations and a satellite control station.

15. The method of claim 1, wherein said first set of satellite tracking data comprises ephemeris data.

16. The method of claim 1, wherein said second set of satellite tracking data comprises at least one of a pseudorange model, ephemeris data, and long term satellite orbit data.

17. The method of claim 1, wherein said integrity data comprises at least one of an identity of at least one unhealthy satellite and a period of outage of said at least one unhealthy satellite.

18. A method, comprising:

- measuring pseudoranges from a remote receiver to a plurality of satellites in a constellation;
- computing a position of said remote receiver using said pseudoranges and satellite tracking data stored within said remote receiver;
- estimating whether said position is valid; and
- requesting integrity data for said satellite tracking data from a server in response to an invalid position.

19. The method of claim 18, wherein said integrity data is generated using another set of satellite tracking data received by said server.

20. The method of claim 18, wherein said estimating step comprises:

- forming a-posteriori residuals associated with said pseudoranges; and
- analyzing said a-posteriori residuals to identify an erroneous pseudorange.

21. The method of claim 20, wherein said integrity data is requested in response to an identified erroneous pseudorange.
22. A satellite positioning system server, comprising:
a means for receiving a first set of satellite tracking data;
a database for storing a second set of satellite tracking data and an identity of at least one remote receiver having said second set of satellite tracking data;
a processor for generating integrity data for said second set of satellite tracking data using said first set of satellite tracking data; and
a means for transmitting said integrity data to said at least one remote receiver.
23. The server of claim 22, wherein said first set of satellite tracking data comprises ephemeris data.
24. The server of claim 22, wherein said second set of satellite tracking data comprises at least one of a pseudorange model, ephemeris data, and long term satellite orbit data.
25. The server of claim 22, wherein said integrity data comprises at least one of an identity of at least one unhealthy satellite and a period of outage of said at least one unhealthy satellite.
26. A satellite positioning system receiver, comprising:
a satellite signal receiver for measuring pseudoranges from said satellite positioning system receiver to a plurality of satellites in a constellation;
a memory for storing satellite tracking data;
a processor for computing a position of said satellite positioning system receiver using said pseudoranges and said satellite tracking data and estimating whether said position is valid; and

a wireless transceiver for transmitting a request for integrity data associated with said satellite tracking data to a server in response to an invalid position.

27. A position location system, comprising:

a remote receiver having a wireless transceiver and a memory for storing a first set of satellite tracking data; and

a server in wireless communication with said remote receiver;

where said server receives a second set of satellite tracking data, generates integrity data for said first set of satellite tracking data using said second set of satellite tracking data, and transmits said integrity data to said remote receiver; and

where said remote receiver receives said integrity data using said wireless transceiver.

28. A method, comprising:

receiving outage notification data generated by a satellite control station;

parsing said outage notification data to identify unhealthy satellites and corresponding periods of outage for said unhealthy satellites;

generating integrity data for a set of satellite tracking data in response to said identified unhealthy satellites and said periods of outage; and

transmitting said integrity data to at least one remote receiver having said set of satellite tracking data.

29. The method of claim 28, wherein said satellite control station is a master control station (MCS) for global positioning system (GPS) satellites, and wherein said outage notification data comprises one or more Notice Advisories to Navstar Users (NANUs).

30. The method of claim 28, wherein said integrity data is periodically transmitted to said at least one remote receiver.

31. The method of claim 28, wherein said integrity data is transmitted to said at least one remote receiver in response to a request from said at least one remote receiver.

32. The method of claim 28, wherein said outage notification data is received via the Internet.